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(54) FERROMAGNETIC TUNNEL JUNCTION
ELEMENT

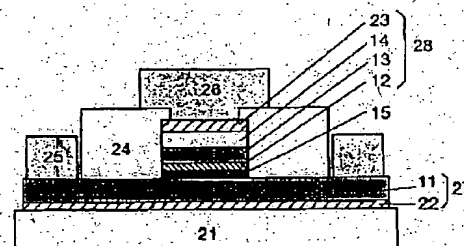
(57) Abstract:

PROBLEM TO BE SOLVED: To suppress the reduction in the magnetoresistance effect due to destruction of a tunnel barrier layer and thereby achieve uniformity and reproducibility, by arranging an amorphous ferromagnetic layer on at least the interface of one of a ferromagnetic layer and the tunnel barrier layer.

SOLUTION: A base film 22 for improving the orientability of a free layer 11 of a ferromagnetic tunnel junction, the layer 11, and an amorphous ferromagnetic layer 15 for improving heat resistance are formed on an oxide layer-deposited silicon substrate 21. A tunnel barrier layer 12 is formed on the layer 15 by preparing an Al layer, and oxidizing the surface of the Al layer by a plasma oxidation method. Further, a fixed layer 13, an antiferromagnetic layer 14, and a protection film 23 are sequentially formed. Next, a lower electrode layer 26 and an upper electrode layer 27 are processed into predetermined configurations. Further, an Al₂O₃ insulating layer 24 for preventing contact between the layers 26 and 27 is formed, and then patterned, and for contact with the lower/upper electrode layers 27 and 28,

Au layers are formed as lower/ upper electrode wiring layers 25 and 26, whereby a ferromagnetic tunnel junction element 20 is prepared.

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